

TOSHIBA SOLID STATE AC RELAY

**TSS1G45S, TSS1J45S, TSS1G47S, TSS1J47S**

OPTICALLY ISOLATED, ZERO VOLTAGE TURN-ON,  
ZERO CURRENT TURN-OFF, NORMALLY OPEN SSR

Unit in mm

COMPUTER PERIPHERALS  
MACHINE TOOL CONTROLS  
PROCESS CONTROL SYSTEMS  
TRAFFIC CONTROL SYSTEMS

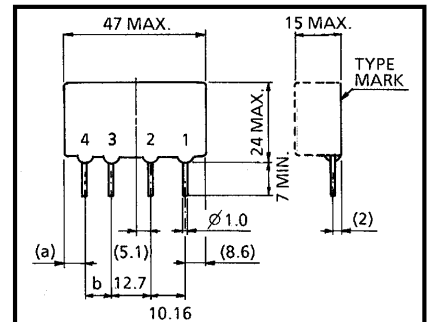
- R.M.S On-State Current :  $I_T(\text{RMS}) = 1\text{A}$
- Repetitive Peak Off-State Voltage :  $V_{\text{DRM}} = 400, 600\text{V}$
- TTL Compatible
- Isolation Voltage :  $2060\text{V AC (}t=1\text{min.)}$
- Including Snubber Network

MAXIMUM RATINGS ( $T_a = 25^\circ\text{C}$ )  
INPUT (CONTROL)

CHARACTERISTIC	SYMBOL	RATING	UNIT
Control Input Voltage (DC) (Note 1)	$V_F(\text{IN})$	6	V
Control Input Current (DC)	$I_F(\text{IN})$	20	mA

OUTPUT (LOAD)

Repetitive Peak Off-State Voltage	TSS1G45S TSS1G47S	$V_{\text{DRM}}$	400	V
	TSS1J45S TSS1J47S		600	
Nominal AC Line Voltage	TSS1G45S TSS1G47S	$V_{\text{AC}}$	120	V
	TSS1J45S TSS1J47S		240	
R.M.S On-State Current	$I_T(\text{RMS})$	1	A	
Peak One Cycle Surge On-State Current (Non-Repetitive)	$I_{\text{TSM}}$	12 (50Hz)	A	
Operating Frequency Range	f	45~65	Hz	
Isolation Voltage ( $t=1\text{min.}$ , Input to Output)	$BV_S / \text{AC}$	2060	V	
Operating Temperature Range	$T_{\text{opr}}$	-30~80	$^\circ\text{C}$	
Storage Temperature Range	$T_{\text{stg}}$	-30~80	$^\circ\text{C}$	



TYPE	a	b
TSS1G45S TSS1J45S	7.2	7.62
TSS1G47S TSS1J47S	9.7	5.08

1. OUTPUT (AC)
2. OUTPUT (AC)
3. INPUT (+)
4. INPUT (-)

JEDEC	—	
EIAJ	—	
TOSHIBA	TSS1G45S TSS1J45S	10-45B1A
	TSS1G47S TSS1J47S	10-45B2A

Weight : 11g

Note 1 : Driving input rating : Insert an external resistance into SSR when the power supply over 6V is used.

Note 2 : Mounting : Soldering of printed wiring board should be used under 260°C and 10 second.

**ELECTRICAL CHARACTERISTICS (Ta = 25°C)**  
**INPUT (CONTROL)**

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Pick Up Voltage	V <sub>FT</sub>	V <sub>AC</sub> = 100V <sub>rms</sub> Resistive Load (R <sub>L</sub> = 100Ω)	—	—	4.5	V
Drop Out Voltage	V <sub>FD</sub>		1.0	—	—	V
Input Resistance	R (IN)		—	300	—	Ω

**OUTPUT (LOAD)**

Off-State Leakage Current	TSS1G45S TSS1G47S	I <sub>OL</sub>	V <sub>AC</sub> = 100V <sub>rms</sub> , f = 50Hz	—	—	1	mA
	TSS1J45S TSS1J47S		V <sub>AC</sub> = 200V <sub>rms</sub> , f = 50Hz	—	—	2	
Peak On-State Voltage	V <sub>TM</sub>	I <sub>T</sub> (RMS) = 6A	—	—	2.6	V	
Peak Turn-On Voltage	V <sub>ON</sub>	V <sub>AC</sub> = 100V <sub>rms</sub> (Fig.2)	—	—	5	V	
dv / dt (Off-State)	dv / dt	V <sub>DRM</sub> = 0.7 × Rated	50	—	—	V / μs	
dv / dt (Commutating)	(dv / dt) <sub>c</sub>	V <sub>DRM</sub> = 0.7 × Rated, I <sub>T</sub> = 1A	2	—	—	V / μs	
Turn-On Time	t <sub>on</sub>	V <sub>AC</sub> = 100V <sub>rms</sub> Resistive Load (R <sub>L</sub> = 100Ω)	—	—	1 / 2	Cycle	
Turn-Off Time	t <sub>off</sub>		—	—	1 / 2		
Isolation Resistance	R <sub>S</sub>	V = 1kV, R.H = 40~60%	—	10 <sup>9</sup>	—	Ω	

**EQUIVALENT CIRCUIT**

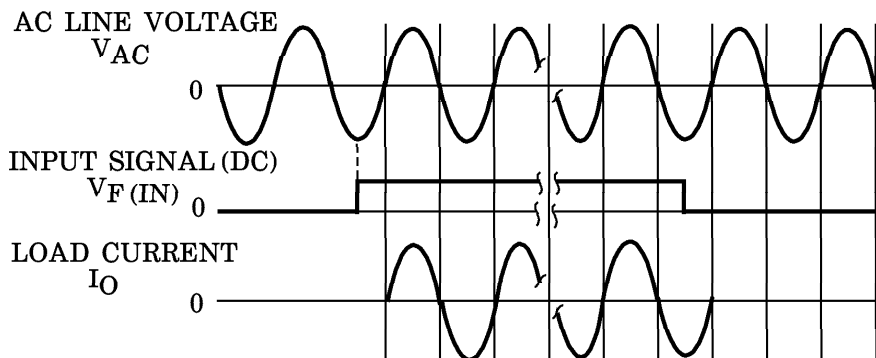
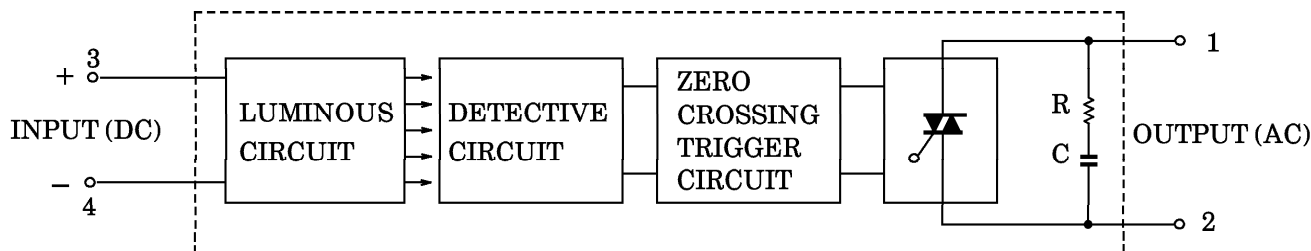


Fig.1 ZERO VOLTAGE SWITCHING WAVEFORM

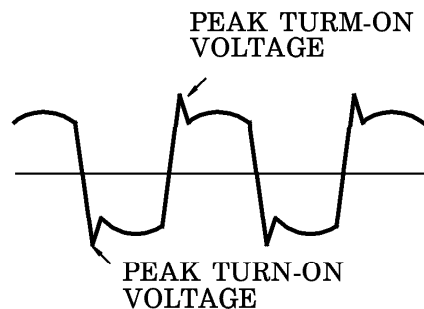
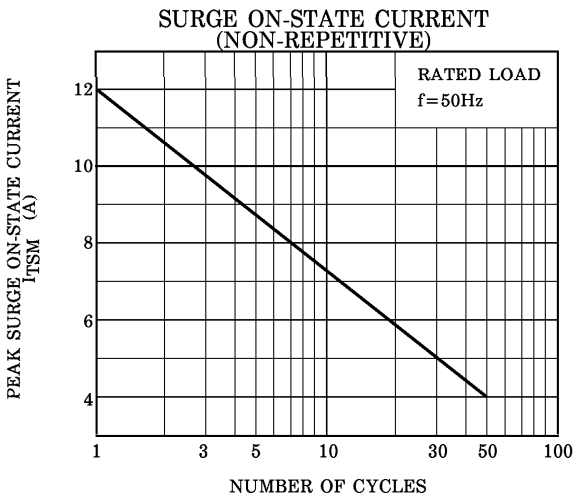
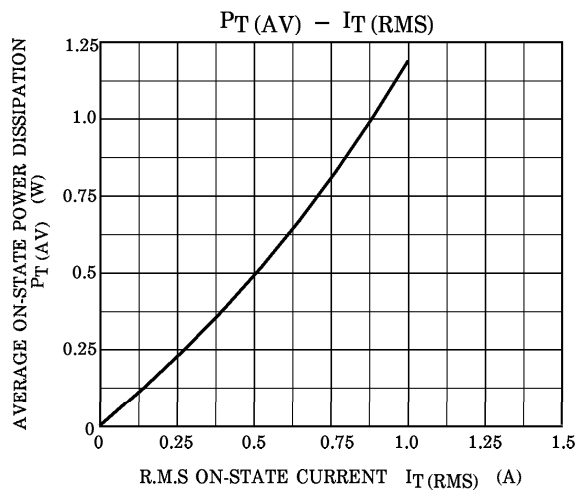
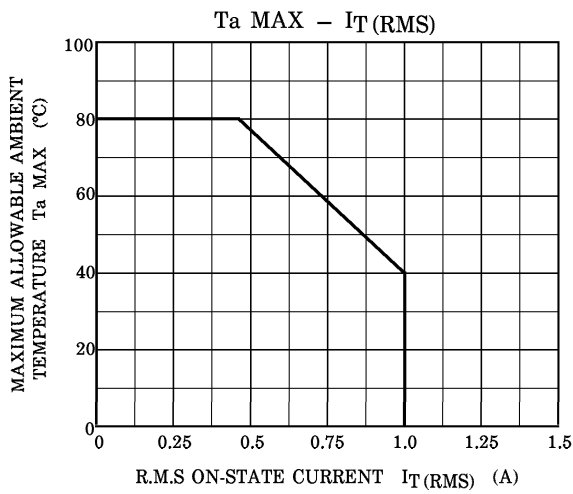


Fig.2 PEAK TURN-ON VOLTAGE WAVEFORM



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